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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/690,569

10/23/2003

Charles Frederick James Barnes

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EXAMINER

MERCEDES, DISMERY E

ART UNIT

PAPER NUMBER

2651

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/690,569

Applicant(s)

BARNES, CHARLES FREDERICK
JAMES

Examiner

Dismery E. Mercedes

Art Unit

2651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 07 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37, 42, 43 and 50-52 is/are pending in the application.
- 4a) Of the above claim(s) 38-41, 44-49, 53 and 54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-15, 18-37, 42, 43 and 50-52 is/are rejected.
- 7) ☒ Claim(s) 8-9, 16-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/23/2003</u> <u>5/2/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of the invention elected in the reply filed on March 7th, 2005 is acknowledged. The traversal is on the ground(s) that the restriction is not proper because the examination of the 1-54 claims would not impose a serious burden on the examiner. This is not found persuasive because as stated in the Election/Restriction requirement the application contains claims drawn to patentably distinct species. However, these patentably distinct species are not only disclosed in the figures but also in the specification, for instance, a) in page 6, lines 10 – 24; b) in page 10, line 26 - page 11, line 14; c) in page 23, lines 20-25 and page 24, lines 16-25, d) page 31, line 31-page 32, line10, of instant specification.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 53-54 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on March 7th, 2005. The examiner respectfully disagrees that claims 53-54 are readable on the elected species, since in the description of the elected species (figs. 10-11c) of instant specification there is no support for the claimed limitations of claims 53-54.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on May 2, 2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

4. The informal drawings are not of sufficient quality to permit examination. Accordingly, replacement drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to this Office action. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The details or elements of submitted drawings cannot be seen or recognized.

Applicant is given a TWO MONTH time period to submit new drawings in compliance with 37 CFR 1.81. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a). Failure to timely submit replacement drawing sheets will result in ABANDONMENT of the application.

Claim Objections

5. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim (i.e. claims 25, 27,31).

A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3,6,7,12,14,18,21,25,52 are rejected under 35 U.S.C. 102(b) as being anticipated by Parks et al. (US 5,739,975).

Parks et al. discloses an information storage apparatus comprising: a storage medium including a plurality of information tracks; and a head assembly having: a substantially planar surface; and a plurality of read/write heads positioned in registry with said information tracks; wherein the read/write heads are arranged substantially in the plane of said planar surface and wherein said information storage medium and said head assembly are arranged in mutually sliding abutment such that said read/write heads are substantially in sliding contact with the outer surface of the information storage medium in use (col.1, lines 48-55; col.17, lines 24-30; col.20, lines 29-40).

As to Claim 2, Parks et al. further discloses wherein said heads are provided on a monolithic layer (col.17, lines 51-55, as depicted in Fig.16d).

As to Claim 3, Parks et al. further wherein the heads are fixed in position and the information storage medium overlies the heads a lubricating layer provided therebetween (col.24, lines 66-67).

As to Claim 6, Parks et al. further discloses wherein all of the read/write heads are mounted on a single member (as depicted in Fig.1 & 5, col.9, lines 56-59).

As to Claim 7, Parks et al. further discloses wherein said member is generally sized and shaped to correspond to the size and shape of the information storage medium (as depicted in Figs 1-2).

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As to Claim 12, Parks et al. further discloses wherein the head assembly comprises pre-processing and/or pre-amplification circuitry for pre-processing and/or pre-amplifying data read by said heads prior to being output from the head assembly (col.17, lines 31-40; col.21, lines 37-44).

As to Claim 14, Parks et al. further discloses wherein at least one read/write head is provided for all of the tracks that are available for information storage on the storage medium (col.25, lines 4-10).

As to Claim 18, Parks et al. further discloses wherein each bit of storage on said storage medium is associated with just one head (col.20, lines 51-59).

As to Claim 19, Parks et al. further discloses information transfer sub-assembly to transfer information to or from the read/write heads (col.1, lines 48-60; col.17, lines 31-34).

As to Claim 21, Parks et al. further discloses a tracking sub-assembly to adjust the positioning of the read/write heads of the drive so that each head is correctly aligned with its particular track on the storage medium (col.2, line 55 – col.3, line 5; col.31, lines 6-33).

As to Claim 25, Parks et al. further discloses an oscillation drive mechanism for oscillating the information storage medium with respect to the head assembly (col.7, lines 57-64; col.25, lines 35-62).

As to Claim 52, Parks et al. further discloses a data storage medium; an array of heads for writing and reading data to/from said data storage medium; and an oscillating drive mechanism for oscillating said data storage medium and said array of heads linearly relative to one another (col.7, lines 57-64; col.25, lines 35-62; col.41, lines 49-63).

8. Claim 50-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Dunfield et al.(US 6,335,850 B1).

Dunfield et al. discloses 50. An information storage apparatus comprising a plurality of read/write heads arranged such that in use data can be read from or written to an information storage medium, wherein in use the position of one or more read/write heads is adjustable by means of one or more piezoelectric elements or the entire detector surface to enable the alignment of the read/write heads and the tracks of the medium to be adjusted. (as depicted in Figs.3A-3B).

As to Claim 51, Dunfield further discloses wherein a central portion of said information storage medium forms part of an induction motor (as depicted in figs.1 and 3-4).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parks et al. in view of Wang et al. (US 2001/0055702 A1).

Parks et al. discloses the information data storage apparatus as disclosed in claim 3, but fails to particularly disclose wherein said lubricating layer comprises a self- lubricating layer on at least one of the storage medium and head array.

However, Wang et al. discloses a self-lubricating layer on surface of a data storage device (abstract). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of invention to modify Parks et al.'s apparatus by implementing a self-lubricating layer on the storage medium, the motivation being because it would provide Parks et al.'s apparatus with the enhanced

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capability of obtaining the desired lubrication and protection between the slider and the medium, and not evaporating under high temperatures (abstract, lines 9-14 taught by Wang et al.).

As to Claim 5, Wang et al. further discloses wherein said self-lubricating layer comprises an artificial diamond coating ([0006]).

11. Claims 10-11,36 are rejected as being unpatentable over Parks et al. in view of Nozieres et al. (EP 1,131,031 A1).

As to Claim 10 & 36, Parks et al. discloses the apparatus as claimed in base claim 1 & 25, but fails to particularly disclose wherein the heads are arranged topologically in a rectangular array.

However, Nozieres et al. discloses such (col.4, [0013], lines 36-39; col.10, [0028], lines 12-17, [0029], lines 41-45). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Park's et al's apparatus by implementing a head array as disclosed by Nozieres et al., the motivation being because it would provide Parks et al. with the enhanced capability of allowing the writing to adjacent tracks without the need for tilting the medium with respect to the head (col.4, lines 38-40 of Nozieres et al.).

As to Claim 11, Nozieres et al. further wherein said head array comprises connections to both ends of the rows and columns (col.4, [0013], lines 41-44).

12. Claim 20 is rejected as being unpatentable over Parks et al. in view of Nozieres et al. (EP 1,131,031 A1), further in view of AAPA "Glass Substrate for Magnetic in HDD", Information Sheet [retrieved 7/24/2002] <http://www7.big.or.jp/~cgi19786/ngf/nglass/ng06e.html> (submitted by applicant), hereinafter, AAPA.

As to Claim 20, Parks et al. in view of Nozieres et al. discloses the apparatus as disclosed in claim 10, and where a wafer being formed with connections to the heads (abstract), but fail to particularly disclose wherein said read/write heads are formed by deposition onto a glass ceramic wafer.

However, AAPA discloses that glass substrates are well known in the art, and therefore it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the apparatus disclosed by Parks et al. and Nozieres et al., by implementing a glass ceramic wafer, the motivation being because, it would provide such apparatus with the capability of obtaining higher storage capacity since the glass substrate has higher surface hardness, higher shock resistance and lower surface roughness (AAPA).

13. Claim 15 is rejected as being unpatentable over Parks et al. in view of Applicant's Admitted Prior Art, hereinafter, AAPA (page 4, lines 1-5 of instant specification).

Parks et al. discloses the apparatus as claimed in claim 7, but fails to particularly disclose a refresh sub-assembly for ensuring that an optimal signal strength is maintained.

However, AAPA suggest that such approach is well known in the art (page 4, lines 1-5 of instant specification). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Parks et al.'s apparatus by implementing the approach as disclosed by AAPA the motivation being because it would provide such apparatus with the capability of obtaining an optimum signal strength that would cause the arm to rotate the head to the appropriate track (page 4, lines 5-9 of AAPA).

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14. Claims 22-24,27,34 are rejected as being unpatentable over Parks et al. in view of Dunfield et al. (US 3,335,850 B1).

As to Claim 22, Parks et al. discloses the apparatus as disclosed in 21, but fails to particularly disclose wherein one or more piezoelectric elements is/arranged to adjust the position of all of said heads together.

However, Dunfield et al. discloses such (as depicted in Figs 3A-3B, 6 and col.5, lines 11-15). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Parks et al.'s apparatus by implementing piezoelectric element as disclosed by Dunfield the motivation being because it is well known in the art, that piezoelectric element would provide such apparatus with actuation speed and more accuracy.

As to Claim 23, Dunfield et al. further discloses wherein one or more piezoelectric elements is/are arranged to adjust the position of all of said heads together (as depicted in Fig.

As to Claim 24, Dunfield et al. further discloses wherein said one or more piezoelectric elements is/are arranged to act on the structure or element on which the read/write heads are mounted to cause a degree of deformation of the supporting structure or element such that the heads mounted thereon undergo movement and can be adjusted in position (col.7, lines 20-35).

As to Claim 27, Parks et al. discloses the apparatus as claimed in claim 25, but fails to particularly disclose a piezo-electric actuator for driving said oscillation. However, Dunfield et al. discloses piezoelectric actuator to position the head relative the medium (as depicted in Figs 3A-3B, 6 and col.5, lines 11-15). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Parks et al.'s apparatus by implementing piezoelectric element as disclosed by Dunfield the motivation being because it is well known in the art, that piezoelectric element would provide such apparatus with actuation speed and more accuracy.

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As to Claim 34, Parks et al. further discloses wherein the information storage medium and array of heads are arranged to oscillate linearly relative to one another (col.41, lines 49-63).

15. Claim 31, is rejected as being unpatentable over Parks et al. in view of Germuska (GB 2178569 A).

Parks et al. discloses the apparatus as claimed in claim 25, but fails to particularly disclose two oscillating information storage media or head arrays arranged to oscillate in anti-phase.

However, Germuska discloses two heads oscillating in anti-phase (abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus disclosed in Parks et al. by replacing the heads of Germuska with the array of heads as disclosed by Parks et al., the motivation being because having the two head arrays oscillating in anti-phase may provide the apparatus with the enhanced capability of accessing all segments in all tracks (abstract).

16. As to Claims 26,28-30,32,35,37,42-43 have limitations similar to those treated in the above rejections, and are met by the references as discussed above.

Allowable Subject Matter

17. Claim 8-9,16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Kikitsu (US 5,729,408); McClure (US 4,636,893); Fiske (US 6,078,471); McKay et al. (US 5,528,819); Koganezawa et al. (US 6,538,854 B2); Kameyama (US 6,330,134 B2).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dismery E. Mercedes whose telephone number is 571-272-7558. The examiner can normally be reached on Monday - Friday, from 9:00am - 4:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit 2651

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